

H. J. MOREY & F. A. BROGDEN.
 KEY SOCKET SWITCH MECHANISM.
 APPLICATION FILED MAR. 1, 1911.

997,406.

Patented July 11, 1911.

Fig. 1.

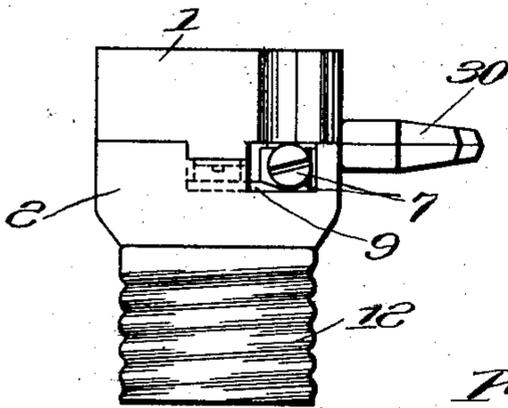


Fig. 2.

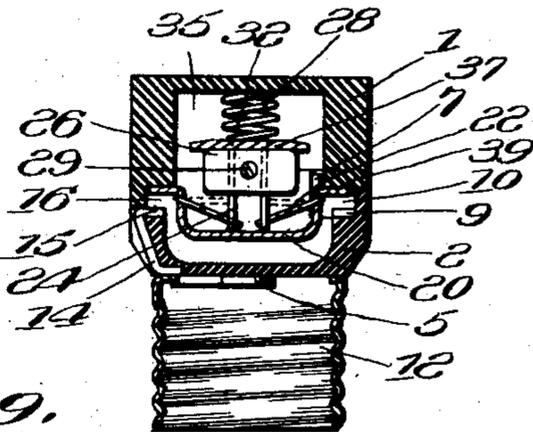


Fig. 9.

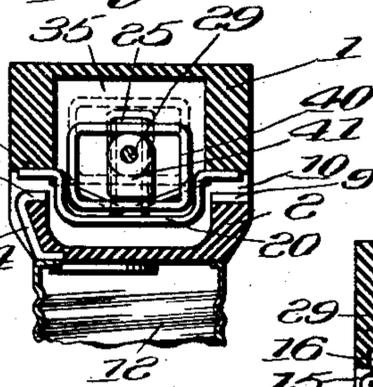


Fig. 4.

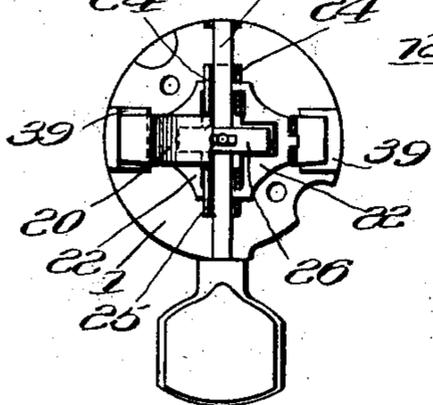


Fig. 3.

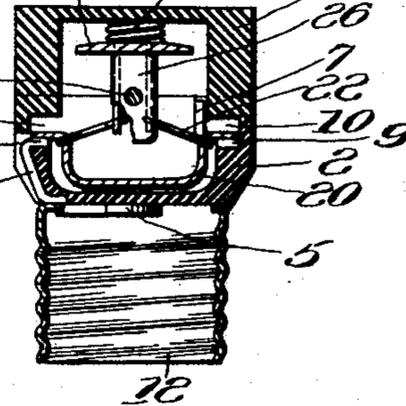


Fig. 5.

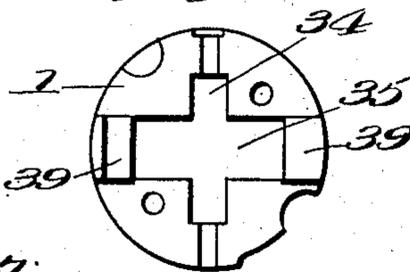


Fig. 6.

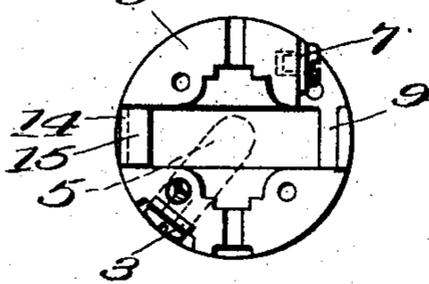


Fig. 8.

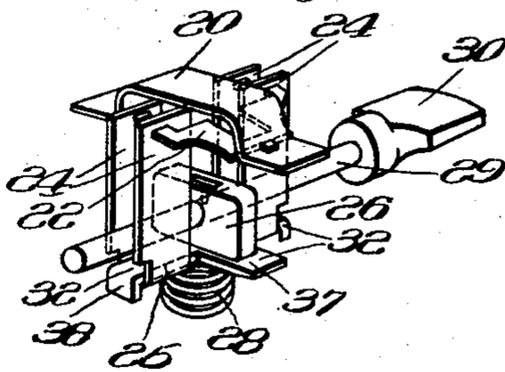
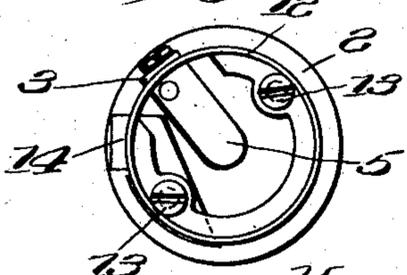


Fig. 7.



Witnesses:
M. L. Brewster

Inventors
 Harry J. Morey & Fay A. Brogden
 By their Attorney
 Alfred Wilkinson

UNITED STATES PATENT OFFICE.

HARRY J. MOREY AND FAY A. BROGDEN, OF SYRACUSE, NEW YORK.

KEY-SOCKET SWITCH MECHANISM.

997,406.

Specification of Letters Patent. Patented July 11, 1911.

Application filed March 1, 1911. Serial No. 611,665.

To all whom it may concern:

Be it known that we, HARRY J. MOREY and FAY A. BROGDEN, citizens of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented new and useful Improvements in Key-socket Switch Mechanism, of which the following is a specification.

Our invention relates to sockets for incandescent electric lamps and consists in a switch of new construction, operation and arrangement, particularly adapted for use in sockets.

Owing to the necessity for safety in electric lighting installations and to the requirements of the underwriters, constantly more stringent, it is important to reduce the dangers of arcing, accidental short circuit, etc., in sockets to the minimum and with that end in view we have modified the structure of the socket and have devised a switch therefor operating with both a quick-make and a quick-break, and in which both the make and break are made at two points.

Our device has the necessary qualities of strength, simplicity and economy in making and assembling.

The essential features are the circuit closer, adapted to carry the current from a contact point at one end to the contact point at the other end when the circuit is closed, a yoke having resilient arms, connections between the yoke arms and the contact piece, and means involving a cam operated by an external thumb-piece for moving the yoke alternately in one direction or the other to effect the snap-make or the snap-break. We prefer to form the insulating body of two pieces of porcelain hollowed out to form a chamber in which all the metallic parts of the switch mechanism are inclosed and protected.

Our invention, and a desirable form of structure here shown in which our invention is embodied, will be understood by reference to the drawing herewith.

Figure 1 is a side elevation of a socket constructed according to our invention. It is not here necessary to show the usual inclosing cap and shell, and they are omitted. Figs. 2 and 3 are sections at a right angle to Fig. 1, with the switch parts in the two different positions. Fig. 4 is a bottom plan of the upper block with the switch parts in

place but with a portion of the circuit-closer broken away. Fig. 5 is a bottom plan of the upper block with all the switch parts removed, showing the grooves for receiving said parts. Fig. 6 is a plan of the upper surfaces of the lower block. Fig. 7 is a plan of the lower surfaces of the lower block. Fig. 8 is an isometric view of the switch mechanism detached, enlarged and reversed. Fig. 9 shows a modified form of switch.

In the figures, 1 indicates the upper block of the insulating base preferably of porcelain, 2 the lower block, 3 one of the wire terminals, secured to the lower block by a suitable screw and extending down over the lower surface of the block to form the central lamp terminal 5. 7 is the second wire terminal also secured in position by a suitable screw, having a contact tip 9 extending into the notch 10 in position to be engaged by one end of the circuit closer. The outer lamp terminal 12 is widely separated from this second wire terminal but is directly connected by one of its contact screws 13—13 (which also unite the two blocks and maintain all the interior parts in position) to a contact piece 14, having a contact tip 15 extending into the second notch 16 in position to be engaged by the opposite end of the circuit closer. These notches may be practically closed by extensions on one block or the other so that the switch mechanism may be confined in a closed chamber. 20 is the circuit closer of any convenient form adapted to span the space between said two contact tips. As here shown it is U shaped to permit a convenient arrangement of the connecting arms 22, which may be simple levers of the form best shown in Fig. 8, having each, one tip fitted to a hole in the circuit closer and at the opposite end two tips fitted to holes in the resilient ends of the arms 24 of the yoke 25. These arms are resilient tending to expand and are compressed toward each other during the longitudinal movement of the yoke, which is moved in one direction by the cam 26, turned in the position shown in Fig. 3, and in the other direction by the spring 28, of spiral or other suitable form, which can so operate when the cam is turned in the cross position shown in Fig. 2. This cam may be of any suitable material, either

metal or porcelain, and is fitted to its spindle 29, suitably journaled on the base, for instance between the two blocks, and is provided with an external thumb-piece 30.

5 This thumb-piece may be fitted on the spindle or connected thereto by the usual pin and slot permitting lost motion.

Practically all the metallic parts may be easily stamped from sheet metal, for instance the yoke may be so stamped and formed in a single piece and at one operation, or as here indicated it may desirably be formed for reasons of strength and rigidity of a slightly heavier base-plate 32 fitted to the cross grooves 34 and 35 in the upper block and provided with the bearing extensions 37 for the cam and with up turned stiffening and guiding lugs 38. To this base-plate the resilient arms made of lighter material may be riveted or otherwise secured one pair on each side. The cam is arranged in the space between the pairs and the bearing extensions extend outwardly from said space. The spindle of course extends at a right angle to the extensions between the arms of the respective pairs.

Fig. 9 illustrates a modification in the operating mechanism. The spring 28 is omitted, and the base-plate is modified as shown into a rectangular form 40, within which operates the cam 41 extending on one side only of its spindle. The cam moves the yoke in both directions. As shown in full lines, the cam has engaged the lower bar of the base plate to move the yoke down. The dotted lines indicate the upper position of the parts, when the cam has been turned against the upper bar of the rectangular base-plate.

40 We will start with the parts in the position shown in Fig. 2 in which the circuit is indicated as broken, the circuit closer ends resting on the pedestals 39, which are merely little extensions on the upper block, extending into the notches to receive the ends of the circuit closer and limit its extent of motion. Then by turning the cam the yoke is forced upwardly and as it moves in that direction it will be seen that the connectors gradually compress the ends of the yoke arms until the center is reached indicated by the dotted line in Fig. 2. Immediately on the yoke arm ends passing said center they are free to expand, and thereby the circuit closer is snapped down into the position shown in Fig. 3 making the contact at both ends and closing the circuit. When the circuit is to be opened and the current turned off the cam is turned across into the position shown in Fig. 2, and thereby the spring is permitted to move the yoke downwardly, whereby the yoke arms are also compressed and the circuit closer snaps upwardly when the center is passed.

65 As for the details of construction and ar-

rangement of parts here shown we believe that they are particularly desirable and are an important part of our invention but we do not intend to limit ourselves to such details in claiming our invention.

Having thus described our invention, we claim,

1. In a key socket switch mechanism for incandescent electric lamps, the combination with a circuit closer, of a yoke having a resilient portion, connections between the resilient portion of the yoke and the circuit closer, means to move the yoke in one direction for snapping the circuit closer in the reverse direction to close the circuit, and independent means to move the yoke in the opposite direction for snapping the circuit closer in a reverse direction to break the circuit.

2. In a key socket switch mechanism for incandescent electric lamps, the combination with a circuit closer, of a movable part having a resilient arm, a connection between the resilient arm and the circuit closer, a rotating cam to move said part in one direction and a spring to move said part in the opposite direction, the parts being arranged so that during the movement in either direction the resilient arm will be compressed, up to a certain point, but when that point is passed the arm will be free to expand snapping the circuit closer in the direction reversely to the direction of movement of the movable part.

3. In a key socket switch mechanism for incandescent electric lamps, the combination with a circuit closer, of a movable part having a resilient arm, a connection between the resilient arm and the circuit closer, means to move said part in one direction and independent means to move said part in the opposite direction, the parts being arranged so that during the movement in either direction the resilient arm will be compressed, up to a certain point, but when that point is passed the compressive force will no longer be applied but the arm will expand snapping the circuit closer in the direction reversely to the direction of movement of the movable part.

4. In a key socket switch mechanism for incandescent electric lamps, the combination with a suitable insulating supporting body for the parts, of a circuit closer, a yoke having resilient arms, hinged connections between the arms and the circuit closer, a cam suitably journaled in the body and adapted to be turned into one position to engage with the yoke and move it longitudinally in one direction, during which movement the circuit closer is snapped in the reverse direction by the operation of the resilient arm, and a spiral spring engaging with the yoke to move the latter in the opposite direction when the pressure of the cam is removed by turning

70

75

80

85

90

95

100

105

110

115

120

125

130

the same into another position, during which opposite movement the circuit closer snaps in the second reverse direction.

5 In a key socket provided with switch mechanism for making a quick-make and a quick break at two points in one leg of the circuit, the combination with a porcelain base for supporting and insulating the parts, lamp terminals and wire terminals suitably supported on the base, a connection between one lamp terminal and one wire terminal, the second lamp terminal and the second wire terminal being arranged to leave a space in that leg of the circuit, a metal circuit closer having its ends arranged respectively to make contact with said second lamp terminal and said second wire terminal, a flat sheet metal base plate, a longitudinally extending yoke secured to the base plate and having resilient arms tending to expand when compressed, connections connecting each arm to the circuit closer, a pintle journaled in the base, a thumb-piece or handle on the outer end of the pintle, a cam arranged on the pintle and adapted to turn therewith, said cam being adapted to engage with the base plate and force it and the yoke in one direction to cause the circuit closer to snap reversely, and a spiral spring arranged above the base plate and adapted to force the base plate and the yoke in the opposite direction causing the circuit closer to snap reversely when the pressure of the cam on the base-plate is removed.

35 6. In a key socket provided with switch mechanism for making a quick-make and a quick-break at two points in one leg of the circuit, a porcelain base for supporting and insulating the parts, lamp terminals and wire terminals suitably supported on the base, a connection between one lamp terminal and one wire terminal, the second lamp terminal and the second wire terminal being arranged to leave a wide space in that leg of the circuit, a metal circuit closer spanning said space having its ends arranged respectively to make contact with said second lamp terminal and said second wire terminal, a base plate having a longitudinally extending yoke secured to each end of the base plate, said yokes being formed of thin metal and having resilient arms tending to expand when compressed, a link on each side connecting one arm of both yokes to the circuit closer, a pintle journaled in the base, a thumb-piece or handle on the outer end of the pintle, a cam arranged on the pintle between the two yokes and adapted to turn with the pintle, said cam being adapted to engage with the yoke and force the same upwardly causing the circuit closer to snap reversely into closed position, and a spiral spring arranged between the base plate and the surface of the upper block and adapted, when the pressure of the cam is removed, to

force the yoke down causing the circuit closer to snap reversely into open position.

7. In a switch mechanism for making a quick-make and a quick-break, the combination with two blocks of insulating material having cavities in their adjacent faces forming a chamber for the switch mechanism, lamp terminals and wire terminals suitably supported on the base, a connection between one lamp terminal and one wire terminal, the second lamp terminal and the second wire terminal being arranged to leave a wide space in that leg of the circuit, a metal circuit closer laterally extending across the chamber to span the space and having its ends arranged respectively to make contact with said second lamp terminal and said second wire terminal, a flat sheet metal base-plate arranged in the chamber against the surface of the upper block, a longitudinally extending yoke secured to the base plate, said yoke being formed of thin metal and having resilient arms tending to expand when compressed, independent connections between the respective arms and the circuit closer, a pintle journaled between the blocks, a thumb-piece or handle on the outer end of the pintle, a cam arranged on the pintle and adapted to turn therewith, said cam being adapted to engage with the base-plate and force it and the yoke in one direction causing the circuit closer to snap reversely, and a spring arranged between the base plate and the surface of the upper block adapted to force the base plate and the yoke in the opposite direction causing the circuit closer to snap reversely when the pressure of the cam on the base-plate is removed.

8. In a quick-make, quick-break switch mechanism, a porcelain base for supporting and insulating the parts, lamp terminals and wire terminals suitably supported on the base, a connection between one lamp terminal and one wire terminal, the second lamp terminal and the second wire terminal being arranged to leave a wide space in that leg of the circuit, a metal circuit closer having its ends arranged respectively to make contact with said second lamp terminal and said second wire terminal, a flat sheet metal base plate having laterally arranged bearing extensions intermediate of its ends, said base plate being arranged against the lower surface of the upper block, a downwardly extending yoke secured to each end of the base plate, said yokes being formed of thin metal and having resilient arms tending to expand when compressed, a link on each side connecting one arm of both yokes to the circuit closer, a pintle journaled in the base, a thumb-piece on the outer end of the pintle, a cam arranged on the pintle between the two yokes and adapted to turn with the pintle, said cam being adapted to force the yoke upwardly causing the circuit closer to

snap reversely into closed position, and a spiral spring arranged between the base plate and the surface of the upper block adapted to force the yoke down causing the
5 circuit closer to snap reversely into open position.

9. In a key-socket switch mechanism for incandescent electric lamps, the combination with a suitable insulating two part base, said
10 base being provided with a chamber formed between its two parts for the switch mechanism, of a circuit closer, a yoke having resilient arms, hinged connections between the arms and the circuit closer, and means to
15 move the yoke in one direction or the other,

respectively to snap the circuit in one direction or the other to turn the current off or on, said means involving a spindle journaled between the parts, a cam on the spindle to engage with a part of the yoke, and an external thumb-piece on the spindle to rotate the cam.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HARRY J. MOREY.
FAY A. BROGDEN.

Witnesses:

J. ROSCOE MILLWARD,
ALLAN W. FOOSE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
